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# National Cooperative Dairy Herd Improvement Program



*A plan for every size herd*

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AGRICULTURAL RESEARCH SERVICE, U. S. DEPARTMENT OF AGRICULTURE

Dairy-Herd-Improvement Letter

ARS 44-220  
(Vol. 46, No. 4)

July 1970

## ARTIFICIAL BREEDING REPORT, 1969<sup>1/</sup>

Data for the artificial breeding report are based on information received from artificial breeding studs, the National Association of Animal Breeders, State Extension Dairymen, and private breeders. A reported 8,209,444 dairy and beef females were bred artificially in 1969. This was 14.6 percent of the total females of breeding age, based on estimated totals of 16,209,000 dairy females and 39,951,000 beef females. Of the females bred artificially, 7,285,063 were dairy and 924,381 were beef. The respective percentages of dairy and beef were 44.9 and 2.3. These data represent an increase of 146,427 dairy cows or 2.1 percent and 129,139 beef cows, or 16 percent over 1968.

As in previous years, the data in the report are based partially on estimations. For example, in cases where the only records available were for ampules of semen sold, the number of first services was estimated to be one-half the number of ampules reported. In addition, the data represent the minimum number of cows bred artificially. This is because figures on a small percentage of artificial

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<sup>1/</sup> Prepared by G. J. King, B. T. McDaniel, F. N. Dickinson, C. A. Rampendahl, J. J. Corbin, and A. H. Kienast.

Issued September 1970

breedings (by small custom-freezing organizations and individuals) were not available to USDA.

Dairy bulls bred 6,590,147 cows. These are presumed to be dairy, but some dairy services to beef cows are probably included. Beef bulls bred 924,381 beef cows and 694,916 dairy cows--a total of 1,619,297. Compared to 1968, dairy-to-dairy breeding was up 166,361 or 2.6 percent; beef-to-beef breeding was up 129,139 or 16 percent; and beef-to-dairy, down 19,934 or 2.8 percent.

Table 1 lists the percentage of U.S. dairy cows and heifers bred artificially, by States, in 1969. These figures show Hawaii leading with 93.6 percent, Florida second with 75.2 percent, and Utah and Connecticut between 60 and 70 percent. There are nine States between 50 and 59.9 percent, 14 States between 40 and 49.9 percent, nine States between 30 and 39.9 percent, 11 States between 20 and 29.9 percent, and three States below 20 percent. These percentages are also presented graphically on the map on page 17.

Table 2 shows the breedings to dairy and beef bulls by State or other source in 1969. 'Other source' includes 52,612 cows bred by various groups and not reported by the States of service and some beef-to-beef breeding reported only by the National Association of Animal Breeders.

The national and State percentages of cows and heifers bred artificially are shown for dairy in table 3 and for beef in table 4. Traditionally, these percentages have been based on the number of cows 2 years old and older. This year percentages were also calculated based on the total number of dairy and beef females presumed to be of breeding age. We believe that the proper number for comparison is the number of cows 2 years old and older on farms January 1, 1969, plus a percentage of 1- to 2-year-old heifers on January 1, 1969, if 1969 breedings are desired. Seventeen months is about the average age of first breeding of dairy heifers. Thus, seven-twelfths, or 58.3 percent of the number of younger heifers was added to the cows 2 years old and older as the number to base the 1969 artificial breeding percentages on.

The percentages for dairy cows, based on U.S. cows 2 years old and older as well as on all cows and heifers of breeding age are given in table 3. Of the larger population, 44.9 percent were bred artificially in 1969. Similar data for beef cattle breeding are shown in table 4. Information obtained from beef cattle specialists indicates that about 40 percent of the beef heifers 1 to 2 years of age are bred annually. Table 4 shows that about 2.3 percent of the Nation's beef cows and heifers were bred artificially in 1969.

Table 5 contains the recalculated percentages of the national dairy herd of cows and heifers that were artificially bred for 1963 through 1969. The recalculation was made from the first year USDA received complete breakdowns of dairy-to-dairy breeding; beef-to-dairy breeding; and beef-to-beef breeding. The new values are shown as the bottom curve in figure 1.

Table 6 shows the top 10 States in number and percentage of dairy and beef cows bred artificially. Wisconsin had the highest number--1,348,308, and Hawaii, the highest percentage--93.6, of dairy cows bred. Texas had the highest number--66,865, and Rhode Island, the highest percentage--13.0, of beef cows bred.

Table 7 shows the scope of artificial breeding by State for 1968 and 1969. The greatest increase in number of dairy cows bred--89,151--occurred in California; the greatest increase in beef cows bred--26,290--occurred in Texas. Twenty-seven States increased in dairy cows bred artificially and 32 States increased in numbers of beef cows bred artificially.

Table 8 gives the history of the artificial breeding census since 1939. The continual upward trend from 7,359 in 1939 to 8,209,444 in 1969 is illustrated in figures 1 and 2. The percentages of dairy cattle bred are shown in figure 1, and the numbers of beef cattle bred since reporting began in 1963 are shown in figure 2.

Table 9 shows that 31 organizations bred cows artificially in 1969. These organizations serviced an estimated

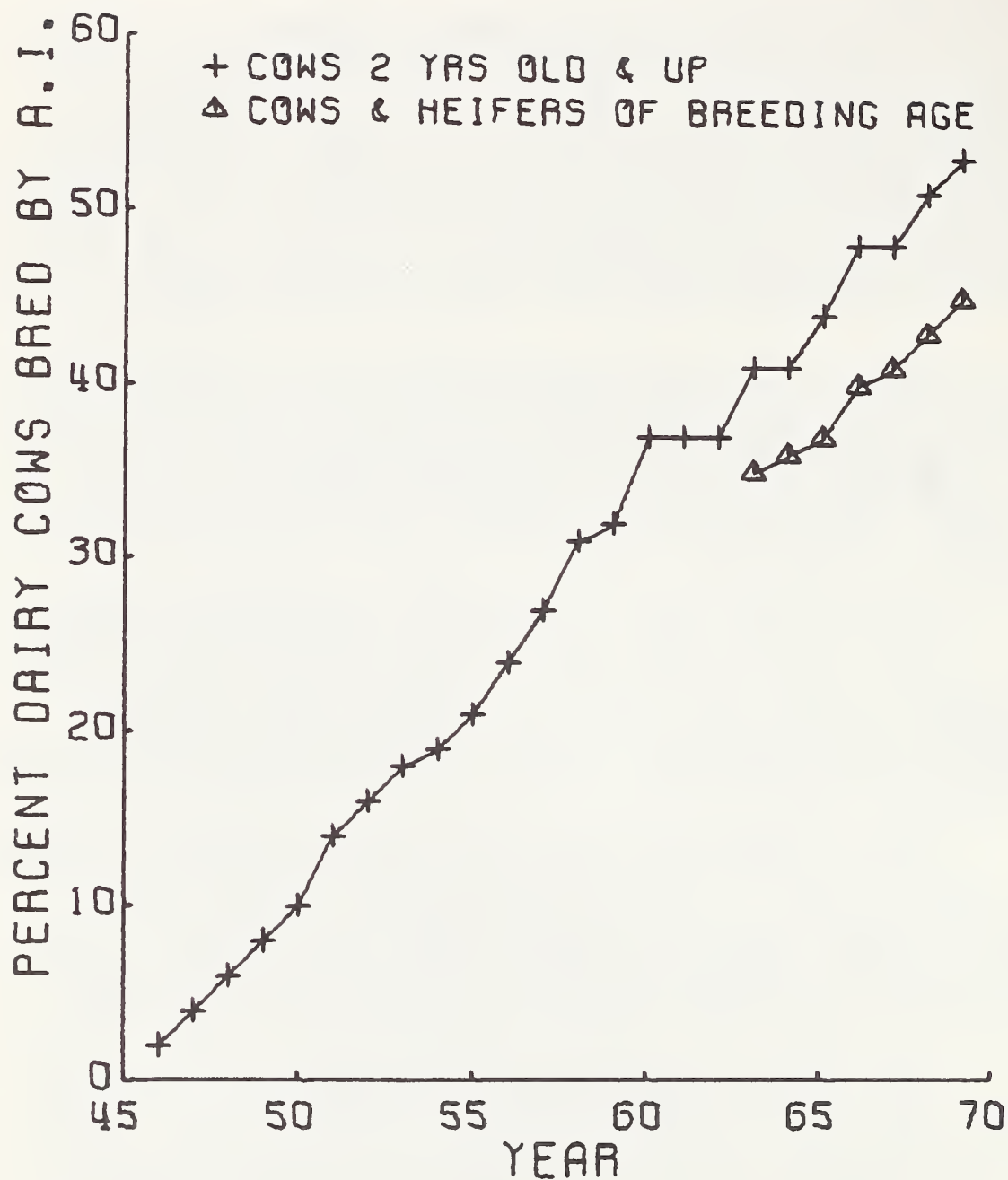


FIGURE 1.--Yearly trends in the percentage of U.S. dairy cows bred artificially since 1946.

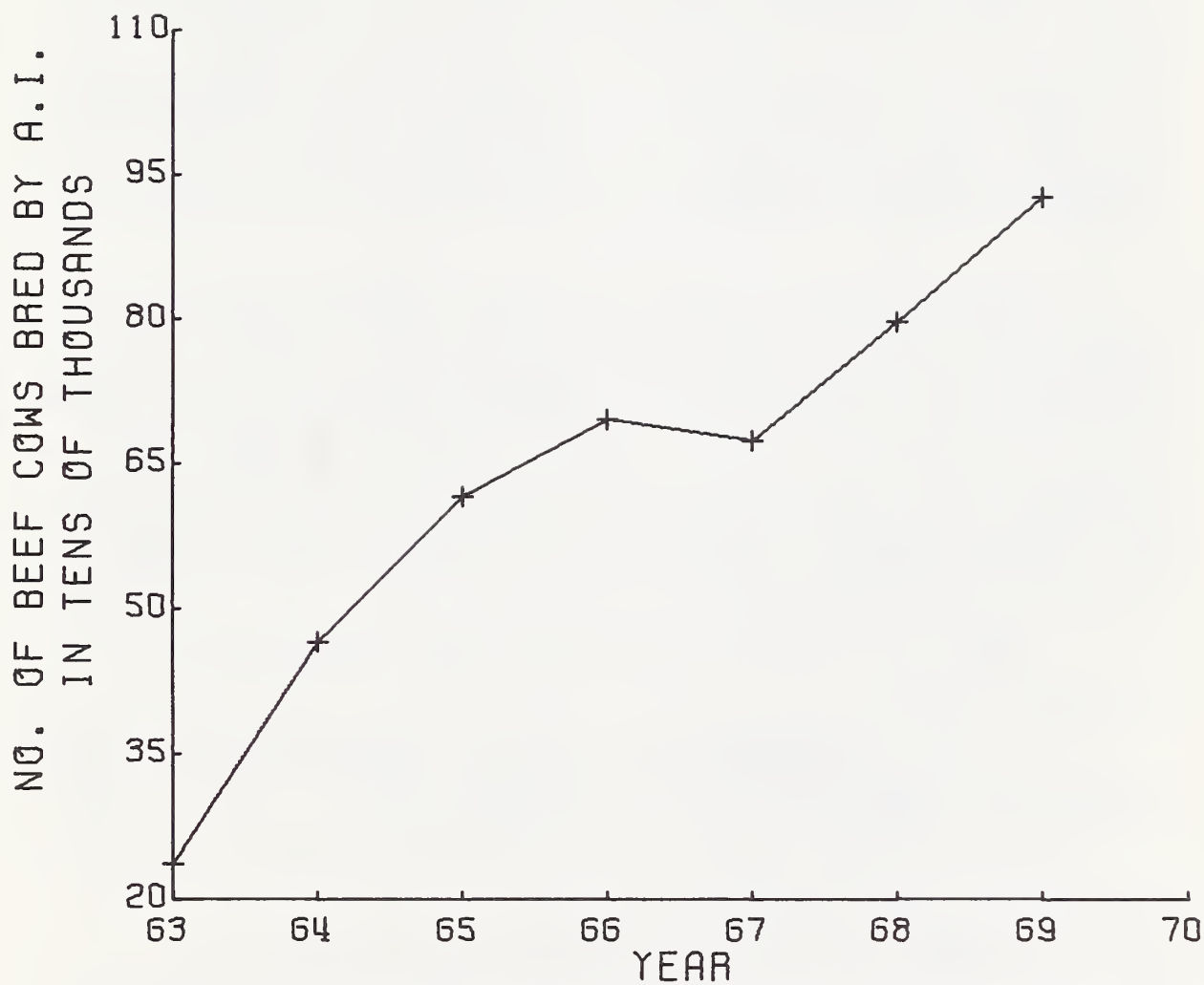


FIGURE 2.--Yearly trends in the number of U.S. beef cows bred artificially since 1963

387,979 herds. However, it is possible that some herds may have been counted more than once when two or more artificial insemination (AI) studs bred cows in the same herd. In addition to the 7,521,890 cows bred by technicians hired by the studs, about 595,055 cows were bred by semen sold to individual farmers, and 92,499 cows were bred by custom-frozen semen.

Two AI organizations reported that they artificially bred 3,230 swine, a decrease of 6,382 from 1968. Services to 235 goats were reported, also a decrease from 1968.

Table 10 shows that a total of 2,275 dairy and beef bulls were in AI studs in 1969. This probably exceeds the number of bulls actually used to breed cows in 1969, because it includes all bulls reported in studs at any time during the year. It was possible to remove bulls without services from the counts only when the stud reported an actual or estimated number of services by each bull. There was a decrease of 70 bulls from 1968.

The distribution of 1,911 dairy bulls by type of service and breed is also shown in table 10. Fifty-three percent of the dairy bulls were available in regular service, 40 percent were involved in progeny testing only, and 7 percent were available only on a special-service basis. The number of bulls in regular service dropped from 1968, while the bulls in progeny testing increased by 49, and those held for special mating increased by 10. Most of the 364 beef bulls were reported as in regular service.

Table 11 lists artificial-breeding organizations active in 1969.

A list of Extension Dairywomen in charge of dairy cattle breeding in each State is given on page 18.

TABLE 1.--Percentage of U.S. dairy cows and heifers bred artificially, by States, in 1969 1/

State	Rank	State	Rank
	<u>Percent</u>		<u>Percent</u>
Hawaii-----	93.6	South Carolina---	43.1
Florida-----	75.2	Illinois-----	41.2
Utah-----	68.5	Idaho-----	39.7
Connecticut-----	63.7	North Carolina---	39.3
Pennsylvania-----	59.4	Georgia-----	37.9
Washington-----	57.2	Kansas-----	37.3
California-----	56.2	Colorado-----	35.8
New York-----	55.9	Indiana-----	35.3
Wisconsin-----	55.8	Nevada-----	34.7
Massachusetts-----	52.8	Louisiana-----	32.1
New Jersey-----	52.6	West Virginia----	30.4
Vermont-----	51.0	Iowa-----	29.2
Ohio-----	50.7	Alabama-----	28.4
Maine-----	49.8	Kentucky-----	26.3
New Hampshire-----	49.2	Missouri-----	26.2
Oregon-----	48.5	Wyoming-----	26.0
Alaska-----	48.1	Texas-----	25.9
Michigan-----	48.0	Mississippi-----	23.8
Arizona-----	47.9	Tennessee-----	23.5
Delaware-----	47.8	Montana-----	22.8
New Mexico-----	45.3	Nebraska-----	20.8
Minnesota-----	44.4	Arkansas-----	20.4
Rhode Island-----	44.3	Oklahoma-----	16.2
Maryland-----	44.1	North Dakota-----	13.0
Virginia-----	44.1	South Dakota-----	12.7
		United States----	44.9

1/ From Statistical Reporting Service (USDA) estimations. Percentage based on U.S. (dairy) cows and heifers 2 years old and older kept for milk plus 58.3 percent of heifers 1-2 years old. (Assuming that average age of first breeding is 17 months.)

TABLE 2.--Cows and heifers bred artificially to dairy and beef bulls in the United States in 1969

State or other source	Studs	Bred to dairy bulls in 1969		Bred to beef bulls in 1969	
		Registered dairy cows <sup>1/</sup>	Total dairy cows	Dairy cows	Beef cows
<hr/>					
<div>----- Number -----</div>					
Alabama-----	0	5,426	45,391	5,486	7,400
Alaska-----	1	110	957	54	20
Arizona-----	0	2,770	27,572	1,674	4,077
Arkansas-----	0	2,864	21,367	3,532	8,052
California-----	3	67,942	524,673	26,123	20,084
Colorado-----	0	4,494	42,552	3,309	12,104
Connecticut-----	1	10,698	48,860	5,314	184
Delaware-----	0	2,676	7,578	1,026	100
Florida-----	0	13,510	140,505	15,938	17,865
Georgia-----	0	9,880	61,054	4,861	7,670
Hawaii-----	0	2,418	15,906	-----	295
Idaho-----	0	8,890	72,829	7,845	8,549
Illinois-----	1	30,496	152,770	17,865	15,058
Indiana-----	0	17,739	101,401	9,752	15,900
Iowa-----	0	20,279	181,771	22,444	40,459
Kansas-----	1	8,152	91,075	6,031	53,424
Kentucky-----	0	13,311	102,849	16,350	20,902
Louisiana-----	1	9,630	63,873	8,088	21,182
Maine-----	0	8,337	41,481	3,816	105
Maryland-----	1	12,211	85,481	5,786	3,926
Massachusetts---	0	9,721	38,970	5,356	327
Michigan-----	2	38,933	257,537	25,456	9,288
Minnesota-----	1	45,429	533,062	58,634	27,918
Mississippi-----	1	7,739	60,532	3,643	10,245
Missouri-----	0	16,289	115,304	8,645	34,938
Montana-----	0	1,259	11,161	1,380	52,109
Nebraska-----	0	5,634	45,722	5,780	26,456
Nevada-----	0	851	6,076	175	1,862
New Hampshire---	0	5,059	21,863	2,731	80
New Jersey-----	0	10,986	42,708	5,191	502
New Mexico-----	0	1,746	19,531	385	3,590
New York-----	1	126,758	655,716	65,577	3,349
North Carolina--	1	15,458	85,754	9,849	11,116
North Dakota---	0	1,918	22,393	1,731	20,506
Ohio-----	2	45,867	256,450	34,938	33,555
Oklahoma-----	0	3,665	29,390	1,595	14,598
Oregon-----	0	7,136	60,787	7,049	10,744
Pennsylvania---	2	132,969	493,269	66,498	11,244
Puerto Rico-----	1	10,407	72,624	-----	-----
Rhode Island---	0	895	3,592	397	130
South Carolina--	0	4,162	32,499	4,144	2,666
South Dakota---	0	2,882	26,269	3,793	29,855
Tennessee-----	3	9,180	82,633	10,571	18,704
Texas-----	0	7,594	99,852	9,328	66,865
Utah-----	1	6,712	59,913	5,832	12,851
Vermont-----	0	22,183	121,838	11,746	485
Virginia-----	1	14,296	116,398	11,030	7,343
Washington-----	2	15,183	119,334	12,226	11,325
West Virginia---	0	3,107	21,275	2,759	3,021
Wisconsin-----	4	114,024	1,198,020	150,288	30,279
Wyoming-----	0	732	5,188	522	15,068
Reported AI activity, but State unknown <sup>2/</sup>	-	490	44,542	2,373	5,697
All beef services <sup>3/</sup>	-	-----	-----	-----	190,309
United States---	31	941,097	6,590,147	694,916	924,381

<sup>1/</sup> Data for registered cows may have been all or partially estimated when incomplete report was given.

<sup>2/</sup> AI breeding activity reported for: Curtiss, 3,000 cows; Herdsman, 28,406 cows; Kansas ABS Unit, 1,060 cows; Midwest Breeders, 684 cows; NOBA, 16,347 cows; Virginia ABA, 3,115 cows. Total: 52,612 cows. Data were received from studs.

<sup>3/</sup> Information obtained from National Association of Animal Breeders, P.O. Box 1033, Columbia, Missouri 65201. See table 9 for data.

TABLE 3.--Percentage of U.S. dairy cows and heifers bred artificially in 1969

State or other source	Dairy cows bred to dairy and beef bulls in 1969	U.S. dairy cows and heifers 1-1-70 <sup>1/</sup>	Dairy cows and heifers bred	U.S. dairy cows and heifers of breeding age 1-1-69 <sup>2/3/</sup>	Dairy cows and heifers bred
	Number	Thousands	Percent	Thousands	Percent
Alabama-----	50,877	151	33.7	179	28.4
Alaska-----	1,011	1.9	53.2	2.1	48.1
Arizona-----	29,246	54	54.2	61	47.9
Arkansas-----	24,899	106	23.5	122	20.4
California-----	550,796	840	65.6	980	56.2
Colorado-----	45,861	112	40.9	128	35.8
Connecticut-----	54,174	74	73.2	85	63.7
Delaware-----	8,604	16	53.8	18	47.8
Florida-----	156,443	199	78.6	208	75.2
Georgia-----	65,915	152	43.4	174	37.9
Hawaii-----	15,906	15	106.0	17	93.6
Idaho-----	80,674	169	47.7	203	39.7
Illinois-----	170,635	359	47.5	414	41.2
Indiana-----	111,153	270	41.2	315	35.3
Iowa-----	204,215	568	36.0	700	29.2
Kansas-----	97,106	224	43.4	260	37.3
Kentucky-----	119,199	388	30.7	454	26.3
Louisiana-----	71,961	196	36.7	224	32.1
Maine-----	45,297	77	58.8	91	49.8
Maryland-----	91,267	182	50.1	207	44.1
Massachusetts---	44,326	72	61.6	84	52.8
Michigan-----	282,993	509	55.6	590	48.0
Minnesota-----	591,696	1,089	54.3	1,333	44.4
Mississippi-----	64,175	224	28.6	270	23.8
Missouri-----	123,949	400	31.0	473	26.2
Montana-----	12,541	47	26.7	55	22.8
Nebraska-----	51,502	211	24.4	248	20.8
Nevada-----	6,251	15	41.7	18	34.7
New Hampshire---	24,594	43	57.2	50	49.2
New Jersey-----	47,899	80	59.9	91	52.6
New Mexico-----	19,916	39	51.1	44	45.3
New York-----	721,293	1,127	64.0	1,290	55.9
North Carolina---	95,603	207	46.2	243	39.3
North Dakota---	24,124	163	14.8	186	13.0
Ohio-----	291,388	493	59.1	575	50.7
Oklahoma-----	30,985	161	19.2	191	16.2
Oregon-----	67,836	118	57.5	140	48.5
Pennsylvania---	559,767	807	69.4	943	59.4
Puerto Rico-----	72,624	----	----	----	----
Rhode Island---	3,989	8	49.9	9	44.3
South Carolina---	36,643	74	49.5	85	43.1
South Dakota---	30,062	200	15.0	237	12.7
Tennessee-----	93,204	345	27.0	397	23.5
Texas-----	109,180	381	28.7	422	25.9
Utah-----	65,745	82	80.2	96	68.5
Vermont-----	133,584	230	58.1	262	51.0
Virginia-----	127,428	245	52.0	289	44.1
Washington-----	131,560	200	65.8	230	57.2
West Virginia---	24,034	69	34.8	79	30.4
Wisconsin-----	1,348,308	2,062	65.4	2,415	55.8
Wyoming-----	5,710	20	28.6	22	26.0
Reported AI activity, but State unknown <sup>4/</sup>	46,915	----	----	----	----
United States---	7,285,063	13,875	52.5	16,209	44.9

<sup>1/</sup> U.S. cows and heifers 2 years old and older kept for milk, January 1, 1970. Estimated by Statistical Reporting Service (USDA). Data are preliminary.

<sup>2/</sup> U.S. cows and heifers 2 years old and older kept for milk, January 1, 1969, plus 58.3 percent of heifers 1-2 years old kept for milk, January 1, 1969. Estimated by Statistical Reporting Service (USDA).

<sup>3/</sup> Dairy cattle on farms, January 1, 1969, are those available for breeding in 1969; 58.3 percent of 1-2 year old heifers were added as the percentage of those coming to breeding age in 1969 that were bred in 1969, assuming that the average age of first breeding is 17 months.

<sup>4/</sup> See table 2, footnote 2, for source of data.

TABLE 4.--Percentage of U.S. beef cows and heifers bred artificially in 1969

State or other source	Beef cows bred to beef bulls in 1969	U.S. beef cows January 1, 1970 <sup>1/</sup>	Beef cows bred	U.S. beef cows and heifers of breeding age 1969 <sup>2/3/</sup>	Beef cows and heifers bred
	Number	Thousands	Percent	Thousands	Percent
Alabama-----	7,400	929	0.8	980	0.8
Alaska-----	20	2.4	.8	2.8	.7
Arizona-----	4,077	376	1.1	399	1.0
Arkansas-----	8,052	939	.9	949	.8
California-----	20,084	946	2.1	1,113	1.8
Colorado-----	12,104	1,082	1.1	1,180	1.0
Connecticut----	184	4	4.6	4	4.6
Delaware-----	100	5	2.0	6	1.7
Florida-----	17,865	909	2.0	958	1.9
Georgia-----	7,670	830	.9	893	.9
Hawaii-----	295	92	.3	102	.3
Idaho-----	8,549	588	1.5	622	1.4
Illinois-----	15,058	744	2.0	902	1.7
Indiana-----	15,900	439	3.6	510	3.1
Iowa-----	40,459	1,443	2.8	1,658	2.4
Kansas-----	53,424	1,839	2.9	1,949	2.7
Kentucky-----	20,902	1,087	1.9	1,099	1.9
Louisiana-----	21,182	903	2.3	964	2.2
Maine-----	105	9	1.2	10	1.1
Maryland-----	3,926	58	6.8	63	6.2
Massachusetts--	327	4	8.2	5	6.5
Michigan-----	9,288	123	7.6	146	6.4
Minnesota-----	27,918	545	5.1	618	4.5
Mississippi-----	10,245	1,273	.8	1,319	.8
Missouri-----	34,938	1,929	1.8	1,943	1.8
Montana-----	52,109	1,589	3.3	1,676	3.1
Nebraska-----	26,456	1,888	1.4	2,195	1.2
Nevada-----	1,862	336	.6	350	.5
New Hampshire--	80	2	4.0	2	4.0
New Jersey-----	502	8	6.3	10	5.0
New Mexico-----	3,590	708	.5	744	.5
New York-----	3,349	62	5.4	66	5.1
North Carolina--	11,116	371	3.0	375	3.0
North Dakota--	20,506	964	2.1	1,005	2.0
Ohio-----	33,555	360	9.3	377	8.9
Oklahoma-----	14,598	2,174	.7	2,232	.7
Oregon-----	10,744	685	1.6	727	1.5
Pennsylvania---	11,244	100	11.2	117	9.6
Puerto Rico----	-----	-----	-----	-----	-----
Rhode Island---	130	1	13.0	1	13.0
South Carolina--	2,666	266	1.0	279	1.0
South Dakota---	29,855	1,719	1.7	1,842	1.6
Tennessee-----	18,704	954	2.0	1,006	1.9
Texas-----	66,865	5,737	1.2	5,990	1.1
Utah-----	12,851	351	3.7	356	3.6
Vermont-----	485	5	9.7	6	8.1
Virginia-----	7,343	499	1.5	524	1.4
Washington-----	11,325	373	3.0	425	2.7
West Virginia--	3,021	207	1.5	210	1.4
Wisconsin-----	30,279	239	12.7	273	11.1
Wyoming-----	15,068	737	2.0	768	2.0
All-beef services <sup>4/</sup> ----	190,309	-----	----	-----	----
Reported AI activity, but State unknown <sup>4/</sup>	5,697	-----	----	-----	----
United States--	924,381	37,433	2.5	39,951	2.3

<sup>1/</sup> U.S. beef cows 2 years and older, January 1, 1970. Estimated by Statistical Reporting Service (USDA). Data are preliminary.

<sup>2/</sup> U.S. beef cows 2 years and older, January 1, 1969, plus 40 percent of heifers 1-2 years old, January 1, 1969. Estimated by Statistical Reporting Service (USDA).

<sup>3/</sup> Beef cattle on farms, January 1, 1969, are those available for breeding in 1969; 40 percent of 1-2 year old heifers were added as the percentage of those coming to breeding age in 1969 that were bred in 1969.

<sup>4/</sup> See table 2, footnotes 2 and 3, for source of data.

TABLE 5.--Dairy cows bred artificially as a percentage of U.S. dairy cows and heifers of breeding age, 1963-1969 inclusive

Year	Dairy cows bred to dairy and beef bulls	U.S. dairy cows and heifers of breeding age 1-1-69 <u>1/</u>	Dairy cows bred as a percentage of U.S. dairy cows and heifers of breeding age <u>2/</u>	Dairy cows bred as a percentage of U.S. dairy cows and heifers 2 years old and older <u>3/</u>
	<u>Number</u>	<u>Thousands</u>	<u>Percent</u>	<u>Percent</u>
1963	7,438,293	21,124	35.2	41.2
1964	7,282,994	20,209	36.0	41.4
1965	7,264,835	19,400	37.4	43.7
1966	7,286,580	18,237	40.0	47.9
1967	7,048,358	17,318	40.7	48.1
1968	7,138,636	16,731	42.7	50.5
1969	7,285,063	16,209	44.9	52.5

1/ U.S. cows and heifers 2 years old and older kept for milk, January 1, 1969, plus 58.3 percent of heifers 1-2 years old kept for milk, January 1, 1969 (58.3% based on assumption that average age of first breeding is 17 months). Estimated by Statistical Reporting Service (USDA).

2/ Percentages to be calculated like this from 1970 and following years. These percentages are used on short line in figure 1.

3/ As previously calculated and published in the Dairy Herd Improvement Letters.

TABLE 6.--States with the highest number and percentage of dairy and beef cows bred artificially in 1969

Rank	State	Cows bred artificially	Rank	State	Cows bred artificially
		<u>Number</u>			<u>Percent</u>
<u>DAIRY COWS</u>					
1	Wisconsin	1,348,308	1	Hawaii	93.6
2	New York	721,293	2	Florida	75.2
3	Minnesota	591,696	3	Utah	68.5
4	Pennsylvania	559,767	4	Connecticut	63.7
5	California	550,796	5	Pennsylvania	59.4
6	Ohio	291,388	6	Washington	57.2
7	Michigan	282,993	7	California	56.2
8	Iowa	204,215	8	New York	55.9
9	Illinois	170,635	9	Wisconsin	55.8
10	Florida	156,443	10	Massachusetts	52.8
<u>BEEF COWS</u>					
1	Texas	66,865	1	Rhode Island	13.0
2	Kansas	53,424	2	Wisconsin	11.1
3	Montana	52,109	3	Pennsylvania	9.6
4	Iowa	40,459	4	Ohio	8.9
5	Missouri	34,938	5	Vermont	8.1
6	Ohio	33,555	6	Massachusetts	6.5
7	Wisconsin	30,279	7	Michigan	6.4
8	South Dakota	29,855	8	Maryland	6.2
9	Minnesota	27,918	9	New York	5.1
10	Nebraska	26,456	10	New Jersey	5.0

TABLE 7.--Comparison of artificial breeding in the United States for 1968 and 1969

State or other source	Dairy cows bred artificially--			Beef cows bred artificially--		
	In 1968	In 1969	Increase or decrease	In 1968	In 1969	Increase or decrease
	Number	Number	Number	Number	Number	Number
Alabama-----	43,001	50,877	+7,876	6,263	7,400	+1,137
Alaska-----	1,014	1,011	-3	46	20	-26
Arizona-----	17,706	29,246	+11,540	1,415	4,077	+2,662
Arkansas-----	27,913	24,899	-3,014	6,255	8,052	+1,797
California-----	461,645	550,796	+89,151	20,097	20,084	-13
Colorado-----	39,140	45,861	+6,721	11,305	12,104	+799
Connecticut----	52,786	54,174	+1,388	968	184	-784
Delaware-----	9,101	8,604	-497	85	100	+15
Florida-----	153,697	156,443	+2,746	18,295	17,865	-430
Georgia-----	58,025	65,915	+7,890	6,279	7,670	+1,391
Hawaii-----	11,100	15,906	+4,806	974	295	-679
Idaho-----	88,287	80,674	-7,613	11,706	8,549	-3,157
Illinois-----	184,389	170,635	-13,754	19,464	15,058	-4,406
Indiana-----	110,407	111,153	+746	15,164	15,900	+736
Iowa-----	234,340	204,215	-30,125	17,800	40,459	+22,659
Kansas-----	84,535	97,106	+12,571	43,900	53,424	+9,524
Kentucky-----	119,506	119,199	-307	17,375	20,902	+3,527
Louisiana-----	72,066	71,961	-105	16,438	21,182	+4,744
Maine-----	46,084	45,297	-787	448	105	-343
Maryland-----	84,338	91,267	+6,929	3,484	3,926	+442
Massachusetts---	43,807	44,326	+519	630	327	-303
Michigan-----	282,282	282,993	+711	8,735	9,288	+553
Minnesota-----	595,115	591,696	-3,419	19,017	27,918	+8,901
Mississippi-----	49,927	64,175	+14,248	6,578	10,245	+3,667
Missouri-----	126,087	123,949	-2,138	30,311	34,938	+4,627
Montana-----	12,926	12,541	-385	63,317	52,109	-11,208
Nebraska-----	52,704	51,502	-1,202	21,979	26,456	+4,477
Nevada-----	6,855	6,251	-604	2,608	1,862	-746
New Hampshire---	24,524	24,594	+70	279	80	-199
New Jersey-----	51,887	47,899	-3,988	397	502	+105
New Mexico-----	24,885	19,916	-4,969	2,255	3,590	+1,335
New York-----	721,401	721,293	-108	4,310	3,349	-961
North Carolina--	92,717	95,603	+2,886	7,053	11,116	+4,063
North Dakota----	27,351	24,124	-3,227	20,003	20,506	+503
Ohio-----	295,744	291,388	-4,356	36,936	33,555	-3,381
Oklahoma-----	30,470	30,985	+515	10,624	14,598	+3,974
Oregon-----	70,466	67,836	-2,630	12,288	10,744	-1,544
Pennsylvania----	551,068	559,767	+8,699	10,413	11,244	+831
Puerto Rico-----	70,404	72,624	+2,220	398	-----	-398
Rhode Island----	5,102	3,989	-1,113	98	130	+32
South Carolina--	35,462	36,643	+1,181	2,955	2,666	-289
South Dakota----	33,192	30,062	-3,130	24,738	29,855	+5,117
Tennessee-----	91,349	93,204	+1,855	12,344	18,704	+6,360
Texas-----	99,399	109,180	+9,781	40,575	66,865	+26,290
Utah-----	56,830	65,745	+8,915	4,379	12,851	+8,472
Vermont-----	140,696	133,584	-7,112	1,544	485	-1,059
Virginia-----	120,006	127,428	+7,422	4,618	7,343	+2,725
Washington-----	146,871	131,560	-15,311	15,453	11,325	-4,128
West Virginia---	23,679	24,034	+355	2,708	3,021	+313
Wisconsin-----	1,334,019	1,348,308	+14,289	25,980	30,279	+4,299
Wyoming-----	5,235	5,710	+475	11,628	15,068	+3,440
Reported AI activity, but State unknown <sup>1/</sup>	17,096	46,915	+29,819	3,237	5,697	+2,460
All beef <sup>1/</sup> services -----	-----	-----	-----	169,093	190,309	+21,216
United States---	7,138,636	7,285,063	+146,427	795,242	924,381	+129,139

<sup>1/</sup> For 1969 see table 2 and footnotes. For 1968 see table 1 and footnotes in the May 1969 Dairy Herd Improvement Letter covering the Artificial Insemination Report for 1968.

TABLE 8.--Status of artificial breeding program in the United States, 1939-1970 inclusive

Year	Studs	Sires in service				Herds <sup>1/</sup>	Dairy cows bred to-		Beef cows bred to beef bulls	Total cattle bred	Cows bred per sire
		Dairy	Beef	Total	Average per stud		Dairy bulls	Beef bulls			
----- <u>Number</u> -----											
1939	7	---	---	33	4.7	646	---	---	---	7,359	228
1940	25	---	---	138	5.5	2,971	---	---	---	33,977	246
1941	35	---	---	237	6.8	5,997	---	---	---	70,751	299
1942	46	---	---	412	9.0	12,118	---	---	---	112,788	274
1943	59	---	---	574	9.7	23,448	---	---	---	182,524	318
1944	56	---	---	657	11.7	28,627	---	---	---	218,070	332
1945	67	---	---	729	10.9	43,998	---	---	---	360,732	495
1946	78	---	---	900	11.5	73,293	---	---	---	537,376	597
1947	84	---	---	1,453	17.3	140,571	---	---	---	1,184,168	815
1948	91	---	---	1,745	19.2	224,493	---	---	---	1,713,581	982
1949	90	---	---	1,940	21.6	316,177	---	---	---	2,091,175	1,078
1950	97	---	---	2,104	21.7	409,300	---	---	---	2,619,555	1,245
1951	94	---	---	2,187	23.3	548,300	---	---	---	3,509,573	1,605
1952	94	---	---	2,324	24.7	671,100	---	---	---	4,295,243	1,848
1953	96	---	---	2,598	27.1	755,000	---	---	---	4,845,222	1,865
1954	93	---	---	2,661	28.6	805,000	---	---	---	5,155,240	1,937
1955	79	---	---	2,450	31.0	845,900	---	---	---	5,413,874	2,210
1956	79	---	---	2,553	32.3	900,400	---	---	---	5,762,656	2,257
1957	75	---	---	2,651	35.3	946,000	---	---	---	6,055,982	2,284
1958	71	---	---	2,676	37.7	975,372	---	---	---	6,645,568	2,483
1959	64	---	---	2,460	38.4	930,059	---	---	---	6,932,294	2,816
1960	62	---	---	2,544	41.0	910,000	---	---	---	7,144,679	2,808
1961	56	---	---	2,486	44.4	863,781	7,047,148	2/435,492	---	7,482,740	3,010
1962	56	2,036	420	2,456	43.9	862,150	6,837,681	2/911,006	---	7,748,687	3,155
1963	51	2,158	401	2,559	50.2	621,141	6,468,545	969,748	235,289	7,673,582	2,999
1964	50	2,140	398	2,538	50.8	654,311	6,165,599	1,117,395	464,959	7,747,953	3,053
1965	3/46	1,867	449	2,316	50.3	591,859	6,301,178	963,657	615,147	7,879,982	3,402
1966	3/44	1,949	439	2,388	54.3	540,265	6,413,453	873,127	695,181	7,981,761	3,342
1967	35	2,012	364	2,376	67.9	458,782	6,259,425	788,933	672,819	4/7,871,265	3,313
1968	3/33	2,028	352	2,380	72.1	407,375	6,423,786	714,850	795,242	7,933,878	3,334
1969	3/30	1,955	390	2,345	78.2	387,979	6,590,147	694,916	924,381	5/8,209,444	3,501
1970	31	1,911	364	2,275	73.4	-----	---	---	---	---	---

<sup>1/</sup> Prior to 1963, number of herds largely reflected membership rather than those actually serviced.<sup>2/</sup> Probably includes some beef to beef inseminations.<sup>3/</sup> Includes one all-beef stud.<sup>4/</sup> Total cattle bred in 1967 includes 150,088 first services, by State only, where breakdowns were not reported.<sup>5/</sup> Not shown are inseminations to 3,230 swine and 235 goats.

TABLE 9.--Cows bred in artificial-breeding organization bull studs in 1969

Stud code	Name of stud <sup>1/</sup>	Herds serviced	Cows bred in 1969						Semen sales and custom-freezing			Total breedings of--			Estimated total number of cows bred	Breedsings of-- Swine Goats
			First services		Total first services	Dairy to beef		Dairy to dairy	Beef to beef	Dairy cows	Beef cows					
			Dairy total	Dairy to beef		Beef to beef										
							Number									
1607	Herdsman-----	2/169	3,379	-----	3,379	-----	28,406	-----	31,785	-----	-----	31,785	-----	---		
2110	Eastern AIC-----	32,565	646,824	69,514	717,103	765	2,734	-----	719,072	765	765	719,837	-----	---		
2309	Atlantic-----	12,323	197,629	25,026	228,187	5,532	426	-----	228,081	5,532	5,532	228,613	-----	---		
2311	NEBA-----	2/8,718	152,392	20,648	174,350	1,310	1,444	-----	174,484	1,310	1,310	175,794	-----	15		
3102	NOBA-----	9,556	205,440	30,547	243,225	7,238	11,350	1,735	247,337	8,973	8,973	256,310	-----	7		
3303	Curtiss-----	37,217	957,074	116,408	1,149,460	75,978	-----	3,000	1,073,482	78,978	78,978	1,152,460	-----	200		
3401	Michigan ABC-----	5,150	131,564	16,474	152,271	4,233	12,375	2,423	160,413	6,656	6,656	167,069	-----	---		
3407	General Genetics-----	2/889	17,183	500	17,783	100	7,048	100	24,731	200	200	24,931	-----	---		
3503	East Central-----	4,500	89,439	13,226	103,165	500	14,660	50	117,325	550	550	117,875	-----	---		
3505	Tri-State-----	18,767	333,792	40,881	379,465	4,792	-----	3,376	374,673	8,168	8,168	382,841	-----	2,906		
3521	Midwest Breeders-----	37,815	565,741	78,793	663,596	19,062	72,606	27,956	717,140	47,018	47,018	764,158	-----	---		
3575	ABS-----	2/82,871	1,302,582	105,679	1,657,417	249,156	-----	-----	1,408,261	249,156	249,156	1,657,417	-----	---		
4101	Minnesota Valley-----	29,198	233,586	27,481	274,807	13,740	5,722	9,782	266,789	23,522	23,522	290,311	-----	---		
4801	Kansas ABSU-----	3,059	48,540	2,350	70,260	19,370	4,567	28,910	55,457	48,280	48,280	103,737	-----	---		
5102	Maryland-W.Va-----	3,825	72,363	6,833	83,911	4,715	5,262	2,108	84,458	6,823	6,823	91,281	-----	---		
5201	Virginia ABA-----	6,598	66,158	2/9,181	78,561	2/3,222	7,116	1,850	82,455	5,072	5,072	87,527	-----	---		
5501	N.C.Instit.B.P-----	11	933	6	939	-----	30	-----	969	-----	-----	969	-----	---		
6102	Select Sires 3/-----	30,154	231,327	36,404	28,379	296,110	122,030	68,446	389,761	96,825	96,825	486,586	324	6		
6301	East Tennessee-----	6,509	18,352	3,246	24,148	2,550	6,501	5,533	28,099	8,083	8,083	36,182	-----	---		
6302	Tennessee ABA-----	5,000	21,690	2,433	29,352	5,229	200	200	24,323	5,429	5,429	29,752	-----	---		
6303	West Tennessee-----	1,027	4,493	590	1,034	1,034	-----	-----	5,083	1,034	1,034	6,117	-----	---		
6502	Mississippi ABC-----	600	23,098	2,702	26,700	900	17,987	2,743	43,787	3,643	3,643	47,430	-----	---		
7201	Louisiana ABC-----	4,758	54,687	7,934	6,825	69,446	4,149	13,440	66,770	20,265	20,265	87,035	-----	2		
8701	Cache Valley-----	2/6,686	46,151	4,840	17,295	68,286	-----	17,507	50,991	34,802	34,802	85,793	-----	---		
9111	Carnation-----	2/21,892	342,058	44,078	51,701	437,837	-----	-----	386,136	51,701	51,701	437,837	-----	---		
9113	All West-----	15,257	126,893	2/18,599	2/14,554	160,046	-----	-----	145,492	14,554	14,554	160,046	-----	5		
9302	Adohr-----	6	5,773	-----	5,773	-----	-----	-----	5,773	-----	-----	5,773	-----	---		
9303	Excelsior-----	135	37,226	290	37,576	60	25,485	300	63,001	360	360	63,361	-----	---		
9316	Genetics, Inc-----	2,270	258,815	10,253	272,712	3,644	-----	-----	269,068	3,644	3,644	272,712	-----	---		
9401	P.R. AI Center-----	419	34,924	-----	34,924	-----	3,698	-----	38,622	-----	-----	38,622	-----	---		
9601	Matanuska Valley-----	35	329	-----	329	-----	-----	-----	329	-----	-----	329	-----	---		
Reported AI activity by individual operators 4/			-----	-----	-----	-----	5,916	2,729	5,916	2,729	2,729	8,645	-----	---		
8406	International Beef Breeders 5/	-----	-----	-----	44,288	44,288	-----	135,654	-----	-----	179,942	179,942	-----	---		
5103	Wye Plantation 5/	-----	-----	-----	10,367	10,367	-----	-----	-----	-----	10,367	10,367	-----	---		
United States-----			387,979	6,230,435	694,916	596,539	7,521,890	359,712	327,842	7,285,063	924,381	8,209,444	3,230	235		

<sup>1/</sup> See table 11 for list of names and addresses of studs.<sup>2/</sup> Data may have been all or partially estimated when incomplete report was given.<sup>3/</sup> See table 10, footnote 3, for studs that merged with Select Sires during 1969. Data for cows bred during 1969 were submitted by the individual studs.<sup>4/</sup> Data were reported by Extension Dairyman in Arizona.<sup>5/</sup> Information obtained from National Association of Animal Breeders, P.O. Box 1033, Columbia, Mo. 65201.

TABLE 10.--Bulls used in artificial-breeding organization bull studs during 1969

Stud code	Name of stud <sup>1/</sup>	Bulls by breed <sup>2/</sup>						Type of service by dairy bulls					
		Ayr- shire	Brown Swiss	Guern- sey	Hol- stein	Jer- sey	Short- horn	Beef	Total	Regular	Special or planned mating	Progeny testing	
----- Number -----													
1607	Herdsmen-----	--	--	--	1	--	--	--	1	1	---	---	
2110	Eastern AIC-----	16	8	18	222	28	--	9	301	95	7	190	
2309	Atlantic-----	2	3	13	34	3	--	17	72	41	6	8	
2311	NEBA-----	5	2	10	70	10	--	2	99	47	2	48	
3102	NOBA-----	--	4	11	34	19	--	22	90	68	---	---	
3303	Curtiss-----	7	5	12	103	12	4	47	190	121	13	9	
3407	General Genetics-	--	--	--	3	--	--	--	3	1	---	2	
3503	East Central-----	--	1	--	29	--	--	5	35	30	---	---	
3505	Tri-State-----	1	6	20	70	8	--	14	119	78	14	13	
3521	Midwest Breeders-	--	5	12	80	4	2	15	118	45	17	41	
3575	ABS-----	5	5	10	292	17	2	75	406	68	60	203	
4101	Minnesota Valley-	2	6	7	90	2	4	21	132	110	1	---	
4801	Kansas ABSU-----	--	2	1	21	1	--	24	49	9	4	12	
5102	Maryland-W.Va-----	5	3	10	31	5	--	7	61	43	---	11	
5501	N.C. Instit.B.P--	--	--	--	13	--	--	1	14	1	1	11	
6102	Select Sires 3/-	1	9	24	144	30	1	40	249	56	---	153	
6303	West Tennessee--	--	--	--	3	2	--	5	10	5	---	---	
7201	Louisiana ABC-----	--	--	5	11	8	--	14	38	6	3	15	
9111	Carnation-----	2	5	8	53	7	2	28	105	77	---	---	
9113	All West-----	--	--	12	37	12	--	4/16	77	56	5	---	
9302	Adohr-----	--	--	6	8	--	--	--	14	12	2	---	
9303	Excelsior-----	--	1	--	26	--	--	--	27	9	1	17	
9316	Genetics, Inc-----	--	1	3	39	5	--	2	50	13	1	34	
9401	P.R. AI Center-----	--	--	--	10	--	--	--	10	10	---	---	
9601	Matanuska Valley-	--	--	--	5	--	--	--	5	5	---	---	
United States-----		46	66	182	1,429	173	15	364	2,275	1,007	137	767	

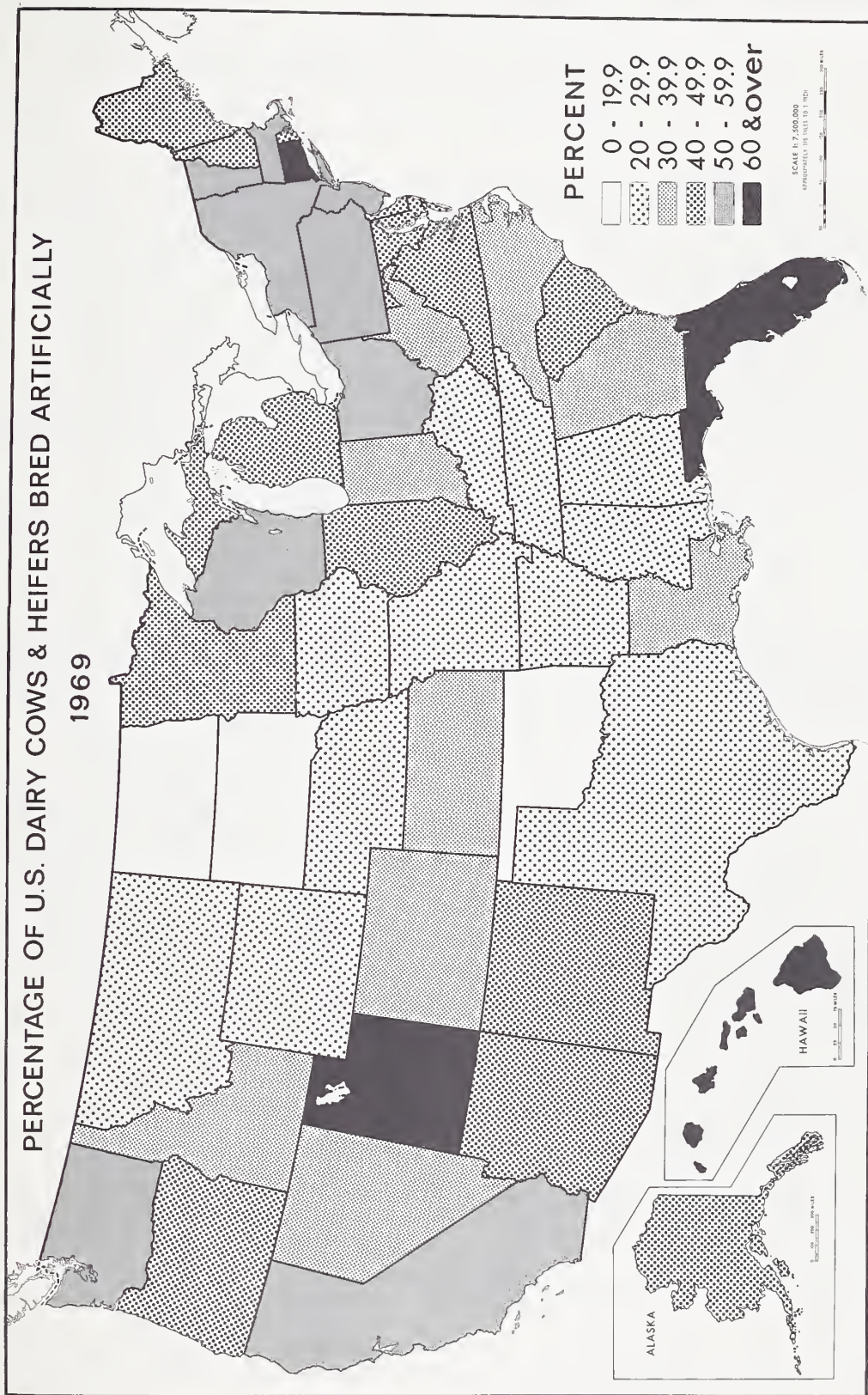
<sup>1/</sup> See table 11 for list of names and addresses of studs.<sup>2/</sup> These counts are based on where bulls are housed and do not reflect the fact that they are available to more than one stud.<sup>3/</sup> AI bull studs that merged with Select Sires, Inc. during 1969 are: Michigan ABC; Virginia ABA; East Tennessee; Tennessee ABA; Mississippi ABC; and Cache Valley. The sires that they owned and were retained as of January 1, 1970 are reflected in the number credited to Select Sires.<sup>4/</sup> Based on report of January 1, 1969.

TABLE 11.--Artificial-breeding organization bull studs in the United States

State	Stud code	Name and address
Alaska-----	9601	Matanuska Valley Breeders Association, Box AE, Palmer 99645.
California-----	9302	Adohr Farms Inseminating Service, P.O. Box 88, Camarillo 93010.
	9303	Excelsior Farms Artificial Breeding Service, Rt. 1, Box 128, Corona 91720.
	9316	Genetics, Inc., Box 938, Hughson 95326.
Connecticut-----	1607	Herdsmen, Box 391, Putnam 06260.
Illinois-----	3303	Curtiss Breeding Service, Inc., Cary 60013.
Kansas-----	4801	Kansas Artificial Breeding Service Unit, Kansas State University, Manhattan 66502.
Louisiana-----	7201	La. Animal Breeders Co-op., Inc., Louisiana State University, Box BD, Baton Rouge 70803.
Maryland-----	5102	Maryland-West Virginia Bull Stud, Inc., Box 555, Frederick 21701.
Michigan-----	3401	Michigan Animal Breeders Co-op., Inc., 3655 Forest Road, East Lansing 48823.
	3407	General Genetics, Box 23, Jenison 49428.
Minnesota-----	4101	Minnesota Valley Breeders Association, New Prague 56071.
Mississippi-----	6502	Mississippi Animal Breeders Co-op., Drawer BA, State College 39762.
New York-----	2110	Eastern Artificial Insemination Co-op., Inc., Box 518, Ithaca 14850.
North Carolina---	5501	N. C. Institutional Breeding Assoc., 231 Polk Hall, North Carolina State University, Raleigh 27607.
Ohio-----	3102	NOBA, Inc., Box 607, Tiffin 44883.
	6102	Select Sires, Inc., 1224 Alton-Darby Road, Columbus 43228.
Pennsylvania-----	2309	Atlantic Breeders Co-op., Box 254, Lancaster 17604.
	2311	Northeastern Breeders Assoc., Inc., R.D. 2, Tunkhannock 18657.
Puerto Rico-----	9401	Puerto Rico Artificial Insemination Center, Inc., Box 958, Dorado 00646.
Tennessee-----	6301	East Tennessee ABA, Rt. 10, Tipton Station Road, Knoxville 37920.
	6302	Tennessee Artificial Breeding Assoc., Granny White Pike, Box 67, Brentwood 37027.
	6303	West Tennessee ABA, Box 38, Yorkville 38389.
Utah-----	8701	Cache Valley Breeding Association, 1950 North Main, Logan 84321.
Virginia-----	5201	Virginia Animal Breeders Assoc., Inc., Drawer 370, Rocky Mount 24151.
Washington-----	9113	All West Breeders, Box 197, Burlington 98233.
	9111	Carnation Farms Breeding Service, Carnation 98014.
Wisconsin-----	3575	American Breeders Service, Inc., De Forest 53532.
	3503	East Central Breeders Association Co-op., Box 191, Highway 26, Waupun 53963.
	3521	Midwest Breeders Co-op., Box 469, Shawano 54166.
	3505	Tri-State Breeders Co-op., Westby 54667.
ALL-BEEF STUDS		
Colorado-----	8406	International Beef Breeders, Inc., Box 29007, Denver 80229.
Maryland-----	5103	Wye Plantation, Queenstown 21658.

# PERCENTAGE OF U.S. DAIRY COWS & HEIFERS BRED ARTIFICIALLY

1969



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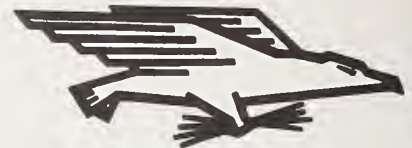
# EXTENSION DAIRYMEN IN CHARGE OF DAIRY CATTLE BREEDING

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